Gen.
Phys. Lab
Wash

VOLUME 26 SECOND SERIES

CONTENTS

JULY, 1925

Isotope Effect in Band Spectra III. Copper Iodide – – – Robert S. Mulliken 1
Tungsten Arc Characteristics – – – – S. H. Anderson and G. G. Kretchmar 33
Ionization of Hydrogen by Electron Impact – – – T. R. Hogness and E. G. Lunn 44
Crystal Structure of Titanium and Chromium – – – – – – R. A. Patterson 56
Precision X-ray Measurements by the Powder Method – – – – – F. C. Blake 60
Schottky Effect in Low Frequency Circuits – – – – – – – J. B. Johnson 71
Non-magnetic Films of Nickel – – – – – L. R. Ingersoll and S. S. DeVinney 86
Electric Charges on Individual Microscopic Particles – – – – – Th. Sexl 92
Reply to Preceding Article – – – – – – – – – – J. B. Derieux 97
Divisibility of the Electron; Nature of the Evidence – – – – – R. A. Millikan 99
Electrification of Rain Drops; Elster and Geitel's Theory – – – T. E. W. Schumann 105
Electrostatic Systems; Quantitative Theory – – – – – – – A. W. Simon 111
Measuring Microvoltages at Radio Frequencies – – – – – – Axel G. Jensen 118
Variation of Young's Modulus with Temperature – A. L. Kimball, Jr. and D. E. Lovell 121
Depth of Compression of Copper Bars during Impact – – – – – E. W. Tschudi 125
Speech Reception; Interfering effect of Tones and Noise – – – Vern O. Knudsen 133
Book Reviews – – – – – – – – – – – – – – – – – – 139

AUGUST, 1925

Multiple X-ray Ionization of Light Atoms – – – – – – – Louis A. Turner 143
Pp′ Groups in Atoms of the Same Electronic Structure – I. S. Bowen and R. A. Millikan 150
Excitation of Forbidden Spectral Lines Paul D. Foote, T. Takamine and R. L. Chenault 165
Line Breadths and Absorption Probabilities in Sodium Vapor
– – – – – – – – – – – – – George R. Harrison and J. C. Slater 176
Absorption Spectrum of Lead Vapor in the Ultraviolet – – – – – R. V. Zumstein 189
Photo-electric Ionization of Caesium Vapor – – Paul D. Foote and F. L. Mohler 195
Ionization in Different Gases for Slow-moving Electrons – – – William P. Jesse 208
Apparent Transmission of Low Velocity Electrons through Aluminum Foil Henry E. Hartig 221
Relation between Critical Potentials and Indices of Refraction – – – Bergen Davis 232
Kinetic Theory of Thermionic Effect – – – – – – – – – N. P. Rashevsky 241
Photo-resistance Effect for Metals at Low Temperatures – – Russell S. Bartlett 247
Theory of Electrical Conduction in Metals – – – – – – – – Alfred Wolf 256
Magnetization and Magnetic Hysteresis in Permalloy O. E. Buckley and L. W. McKeehan 261
Theory of Ferromagnetism; a Contribution – – – – – – – L. W. McKeehan 274
Book Reviews – – – – – – – – – – – – – – – – – – 280

PROCEEDINGS OF THE AMERICAN PHYSICAL SOCIETY

Portland, Oregon, Meeting, June 19, 1925; Minutes and Abstracts 1-24 – – – – – 281

SEPTEMBER, 1925

Directed Quanta of Scattered X-rays – – Arthur H. Compton and Alfred W. Simon 289
Wave-lengths of Scattered X-rays – – – Samuel K. Allison and William Duane 300
Series Spectra of Two-valence-electron Atoms of Boron and Carbon
– – – – – – – – – – – – – I. S. Bowen and R. A. Millikan 310

The Spectrum of Silicon Nitride – – – – – – – – – ROBERT S. MULLIKEN 319
Ionization of HCl by Electrons – – – – – E. F. BARKER AND O. S. DUFFENDACK 339
Secondary Electron Emission from Iron, Nickel and Molybdenum – ROBERT L. PETRY 346
Negative Ion Emission from Oxide Coated Filaments – – – – HENRY A. BARTON 360
Persistence of the Radiation Excited in Mercury Vapor – – – – LUCY J. HAYNER 364
Duration of Fluorescence of Mercury Vapor – – – – – – – R. N. GHOSH 376
Optical Constants of Magnesium and Zinc Crystals – – – – – M. E. GRABER 380
Orientations of Crystals in Electrodeposited Metals – – – RICHARD M. BOZORTH 390
Binaural Beats – – – – – – – – – – – – – – – C. E. LANE 401
Book Reviews – – – – – – – – – – – – – – – – – – – 413

OCTOBER, 1925

Physically Degenerate Systems and Quantum Dynamics – – – – J. C. SLATER 419
Estimation of Maximum Coefficients of Absorption – – – – – RICHARD C. TOLMAN 431
Number of Beta-rays Associated with Scattered X-rays G. E. M. JAUNCEY AND O. K. DEFOE 433
Ionization of Gas Molecules by Electron Impacts K. T. COMPTON AND C. C. VAN VOORHIS 436
Post-arc Conductivity and Metastable Helium – – – – – – – CARL ECKART 454
Mobility of Argon and Hydrogen Ions in Air – – – – – – HENRY A. ERIKSON 465
Emission and Absorption Bands of Carbon Dioxide in the Infrared – JOSEPH W. ELLIS 469
Effect of Light on Thermal Conductivity of Selenium – – – – – R. E. MARTIN 475
Thermo-electric Effect in Single Crystal Zinc Wires – – – – ERNEST G. LINDER 486
Treatment of Radiation-Pressure and Gas-Pressure as Due to Inter-Molecular Forces – – – – – – – – – – JOHN Q. STEWART 491
Scattering of Light in Mixtures of Air and Carbon Dioxide – – – DURGADAS BANERJI 495
Simultaneous High Frequency and Direct Current Resistances of Fine Wires – – – – – – – – – – – – – J. D. STRANATHAN 500
Relation between the Loudness of a Sound, and Its Physical Stimulus J. C. STEINBERG 507
Book Reviews – – – – – – – – – – – – – – – – – – – 524

NOVEMBER, 1925

Fine Structure of Certain X-ray Absorption Edges – – – KATHERINE CHAMBERLAIN 525
Low Voltage Arcs in Hydrogen, Nitrogen, and in Certain Mixtures – – C. T. KWEI 537
One-Valence-Electron Emitters of Band Spectra – – – – – ROBERT S. MULLIKEN 561
Indirectly Excited Fluorescence Spectra – – – – – – – – – S. LORIA 573
Scattering of Electrons in Ionized Gases – – – – – – – IRVING LANGMUIR 585
Production of Negative and Positive Ions by Electron Collisions – – – F. L. MOHLER 614
Ions from Hot Platinum – – – – – – – – – – HENRY A. ERIKSON 625
Mobility of the Ions of the Active Deposits of Th and Ra – – – HENRY A. ERIKSON 629
Ionization in Reacting Gases – – – – – – – – – A. KEITH BREWER 633
Photo-electric Threshold for Mercury – – – – – – – – C. B. KAZDA 643
Photo-electric Emission from Platinum – – – – – – ALBERT E. WOODRUFF 655
Photo-electric Valve Coated with Potassium – – – – – – – V. M. ALBERS 671
Electric Conductivity and Capacity of Disperse Systems. II – – – HUGO FRICKE 678
Electric Capacity of Suspensions of Red Corpuscles of a Dog – – – HUGO FRICKE 682
Influence of a Branch Line Upon Acoustic Transmission – – – – G. W. STEWART 688

DECEMBER, 1925

Change of Wave-length of Scattered X-rays; Precision Measurement – – H. M. SHARP 691
Photo-electrons Produced by X-rays; Direction of Ejection – – – D. H. LOUGHRIDGE 697
Molybdenum K Series; Wave-lengths and Relative Intensities – – – – – – – – – – SAMUEL K. ALLISON AND ALICE H. ARMSTRONG 701

Lines in the L Spectrum of Tungsten and the K Spectrum of Copper; Relative Intensities – – – – SAMUEL K. ALLISON AND ALICE H. ARMSTRONG 714
X-ray Lines and Absorption Limits; Apparent Shape – – – – F. K. RICHTMYER 724
Lattice Parameter and Density of Pure Tungsten – – – – – WHEELER P. DAVEY 736
Soft X-rays from Iron, Cobalt, Nickel and Copper – – – CHARLES H. THOMAS 739
Relative Intensities in Series Spectra; Application of the Correspondence Principle to – – – – – – – – – – – – – – FRANK C. HOYT 749
Fluorescence of Cadmium Vapor – – – – – – – – – – – A. D. POWER 761
Absorption Spectrum of Manganese Vapor in the Visible and Ultraviolet – R. V. ZUMSTEIN 765
Infrared Absorption Spectrum of Water; Variation with Temperature – J. R. COLLINS 771
Critical Potential of the Negative Band Spectrum of Nitrogen – – ENOS E. WITMER 780
Ionization of Nitrogen by Electron Impact – – – T. R. HOGNESS AND E. G. LUNN 786
Striated Discharge in Hydrogen – – – – – – – – – – ARTHUR BRAMLEY 794
Secondary Emission from Nickel Due to Slow Positive Ion Bombardment – A. L. KLEIN 800
Mobility of Negative Ions in Various Flames – – – – – – PAUL E. BOUCHER 807
Measurement of the Four Magnetic Transverse Effects – – – – EDWIN H. HALL 820
Small Resistance Thermometer – – – – – – – – – – GEO. F. TAYLOR 841
Vapor Pressure of Metals; New Experimental Method W. H. RODEBUSH AND A. L. DIXON 851
Mercury Vapor Pressure at Low Temperatures – – – FRANKLIN E. POINDEXTER 859
Book Reviews – 869
INDEX to Volume 26 – – – – – – – – – – – – – – – – – – 873

The Collegiate Press
GEORGE BANTA PUBLISHING COMPANY
MENASHA, WISCONSIN